

Claims 1-15, 17 and 18 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over Pearlstine et al. (U.S. Patent 6,087,416) or Kappele et al. (U.S. Patent 6,063,834), either of which in view of Matyjaszewski et al. (U.S. Patent 5,087,937).

Claim 2 has been cancelled.

Claims 1, 3, 8 and 9 have been amended and claim 19 has been added.

Claims 1-15, 17 and 18 are presented for reconsideration; claim 19 is presented for consideration.

REMARKS

The examiner asserts the application has no abstract. This is surprising since there is one in the printed PCT application, and in the undersigned's copy, the abstract is the last page, page 38. A copy of said page is appended as a separate sheet.

Claims 1, 3, 8 and 9 have been amended by replacement. No other claims have been amended. Claim 19 has been added. Another version of the amended claims, showing the changes relative to the previous version, is appended. Additions are shown by underlining. Deletions are shown by strikethrough rather than bracketing since the claims may contain bracketing that is to remain. No new matter has been added.

Claims 8 and 9 are rejected under 35 U.S.C. § 112, second paragraph, as indefinite. It is respectfully submitted that claims 8 and 9 as presently amended, and indeed all the claims submitted for reconsideration are in good formal order. Reconsideration and withdrawal of the rejection of claims 8 and 9 under 35 U.S.C. §112, second paragraph is therefore solicited.

Applicants have amended their claims in order to more particularly point out and distinctly claim a preferred aspect of their invention. Thus, the limits of originally filed claim 2 have been incorporated into claim 1. Since claim 2 fails to further limit amended claim 1, it has been presently cancelled. Claim 1 also recites, "*provided that thermosetting compositions are excluded.*" Applicants note the disclosure of polymer solutions in the last paragraph of page 16 in this regard.

New claim 19 is supported by originally filed claim 16. No new matter has been added.

Claims 1, 5, 7-9 and 13-15 are rejected under 35 U.S.C. § 102(e) as being anticipated by Barkac et al. '433 (U.S. Patent 6,268,433), and claims 1-2, 5-9 and 12-15 are rejected under 35 U.S.C. § 102(e) as being anticipated by Barkac et al. '391 (U.S. Patent 6,391,391). Additionally, claims 3-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Barkac et al. '391 (U.S. Patent 6,391,391).

Applicants note that the disclosure and claims of both references are strictly limited to thermosetting compositions. Applicants also note that the 35 U.S.C. § 371 102(e) dates for these 2 patents are August 6, 1999 and May 15, 2001, respectively, while the priority document for the instant application was filed on **December 31, 1998**. This document, which is of record and is in English, antedates both references. Hence they are unavailable as "prior art". Reconsideration and withdrawal of all grounds of rejection over both Barkac et al. patents is therefore seen to be in order.

Claims 1-15, 17 and 18 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matyjaszewski et al. (U.S. Patent 5,087,937) in view of either Pearlstine et al. (U.S. Patent 6,087,416) or Kappeler et al. (U.S. Patent 6,063,834). Claims 1-15, 17 and 18 are also rejected under 35 U.S.C. § 103(a) as being unpatentable over Pearlstine et al. (U.S. Patent 6,087,416) or Kappeler et al. (U.S. Patent 6,063,834), either of which in view of Matyjaszewski et al. (U.S. Patent 5,087,937). These rejections may be discussed together.

The examiner asserts that Matyjaszewski et al. disclose that the block copolymer is used in inks, but does not explicitly disclose ink components. Pearlstine et al. and Kappeler et al. disclose ink components. Applicants respectfully traverse these rejections.

U.S. Patent 5,807,937 has been carefully reviewed. The reference is clearly deficient with regard to component b). As the examiner acknowledges, no dispersible inorganic or organic pigments (component b)) are disclosed. With regard to the statement: *It is disclosed that the block which comprise the copolymer are obtained from both polar and non-polar monomers*, applicants have reviewed the complete, lengthy specification, particularly the sections in col. 14 beginning below the general formula and extending into column 15. There is some vague disclosure in col. 15 of functional groups in the monomer units, but there is no disclosure of copolymers comprising different individual polymer blocks that differ in polarity, much less polymer blocks which differ in polarity due to the differing amounts of functional groups in the monomer units used to prepare them. In contrast

thereto, instant claim 1 recites, *and wherein the difference in polarity is obtained by copolymerizing polymer blocks A and B with different amounts of functional monomers.*

Instant claim 1 thus differs from Matyjaszewski in at least two significant ways:

- the presence of pigments in the composition, and
- the presence of polymer blocks which differ in polarity due to the differing amounts of functional groups in the monomer units used to prepare them.

Applicants note that the disclosure of "ink" in Matyjaszewski may, but does not necessarily suggest "pigments", whereas the claimed compositions are strictly limited to pigments as component b). Ink compositions may contain dyes as colorants as an alternative to pigments, as U.S. Patent 6,087,416 (Pearlstine et al.) correctly points out in col. 2, lines 65-67.

Matyjaszewski et al. is strictly limited to processes for atom (or group) transfer radical polymerization (ATRP) to produce novel polymers (see abstract), while Pearlstine et al. is limited to conventional polymers known in the art (col. 4, line 4). Hence there is no motivation except hindsight to combine the teachings of these references.

Pearlstine et al. is directed to the specific problem of printing onto a hydrophobic substrate, vinyl. Also, the disclosure of Pearlstine et al. is strictly limited to the presence of specific silicon surfactants and fluorinated surfactants, cf. col. 2, line 27. A very limited group of surfactants of defined structural formulae is disclosed in columns 4 and 5. Other surfactants are not suggested; cf. col. 4, lines 21-22, which state, *In general, the fluorinated surfactants tend to generate foam in the ink and therefore are not preferred.* This makes it clear that the choice of surfactants is very limited.

The references differ from each other in multiple aspects. Therefore, the combination of Pearlstine with Matyjaszewski is improper *per se*. Moreover, even if the combination were proper, only hindsight selection from their disclosures would enable reconstruction of the invention presently claimed, and hindsight is a clearly inadequate basis for a rejection under 35 U.S.C. § 103(a).

Similar comments apply to the combination of Matyjaszewski with U.S. Patent 6,063,834 (Kappele et al.). Matyjaszewski is clearly deficient in teaching pigments, and the disclosure of Kappele applies to dyes or pigments without any preference for pigments.

Additionally, Matyjaszewski et al. is strictly limited to processes for atom (or group) transfer radical polymerization (ATRP) to produce novel polymers (see abstract), while Kappele et al. only discloses using conventional polymerization techniques (see col. 5, lines 23-42) to prepare certain binder materials which impart improved wet-rub resistance. Hence there is no motivation except hindsight to combine the teachings of these references.

None of the Matyjaszewski et al., Pearlstine et al. or Kappele et al. references teaches copolymers prepared by atom (or group) transfer radical polymerization (ATRP) wherein the difference in polarity is obtained by copolymerizing polymer blocks A and B with different amounts of functional monomers, no combination of these references can make this suggestion, much less suggest to combine these copolymers with 0.1 - 99.9 % by weight of dispersible inorganic or organic pigment particles as required by instant claim 1. Compositions as claimed in claim 3 are ever far more remote.

Reconsideration and withdrawal of all grounds of rejection of the instant claims over any combination of the teachings of Matyjaszewski et al., Pearlstine et al. and Kappele et al. is respectfully solicited in light of the remarks *supra*.

Since there are no other grounds of objection or rejection, passage of this application to issue with claims 1-15 and 17-19 is earnestly solicited.

Applicants submit that the present application is in condition for allowance. In the event that minor amendments will further prosecution, Applicants request that the examiner contact the undersigned representative.

Respectfully submitted,



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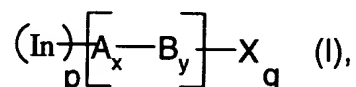
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APPENDIX: Marked up version of amended claims.

1. (amended) A composition comprising-

a) 0.1 - 99.9 % by weight of a block copolymer of the formula:



wherein:

In represents a polymerization initiator fragment of a polymerization initiator which is selected from the group consisting of C₁-C₈-alkyl halides, C₆-C₁₅-aralkylhalides, C₂-C₈-haloalkyl esters, arene sulfonyl chlorides, haloalkanenitriles, α-haloacrylates and halolactones;

p represents one or two;

A and B represent polymer blocks which differ in polarity and consist of repeating units of ethylenically unsaturated monomers and wherein the difference in polarity is obtained by copolymerizing polymer blocks A and B with different amounts of functional monomers;

x and y represent numerals greater than zero and define the number of monomer repeating units in polymer blocks A and B;

X represents a polymer chain terminal group; and

q represents a numeral greater than zero; and

b) 0.1 - 99.9 % by weight of dispersible inorganic or organic pigment particles,

provided that thermosetting compositions are excluded.

3. (amended) A composition according to claim 21, wherein the content of functional monomers in each polymer block A or B differs from the other polymer block by at least 20 % by weight.

8. (amended) A composition according to claim 1, wherein the dispersible organic pigment particles of component b) are selected from the azo pigment group consisting of azo, disazo, naphthol, benzimidazolone, azo condensation, metal complex, isoindolinone, ~~and isoindoline pigments, the chinophthalon pigment, and~~ dioxazine pigments and the polycyclic pigment group consisting of indigo, thioindigo, quinacridones, phthalocyanines, perylenes, perionones, anthraquinones, ~~such as aminoanthraquinones or hydroxyanthraquinones, anthrapyrimidines, indanthrones, flavanthrones,~~

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pyranthrones, anthantrones, isoviolanthrones, diketopyrrolopyrroles, ~~and~~ carbazoles, pigments and pearlescent flakes.

9. (amended) A composition according to claim 1, wherein the dispersible inorganic pigment particles of component b) are selected from the group consisting of aluminum, aluminum oxide, silicon oxide, ~~and~~ silicates, iron(III)_oxide, chromium(III)_oxide, titanium(IV)_oxide, zirconium(IV)_oxide, zinc oxide, zinc sulfide, zinc phosphate, mixed metal oxide phosphates, molybdenum sulfide, cadmium_sulfide, carbon black, ~~or~~ graphite, vanadates, chromates, ~~and~~ molybdates, and mixtures, or crystal forms ~~or~~ modifications thereof.

Pigment composition containing ATRP polymers

Abstract

The present invention relates to a composition containing ATRP polymers and dispersible inorganic or organic pigment particles. The pigment composition is useful for preparing coating compositions, prints, images, inks or lacquers and other disperse systems.